

Project Struggle: A Community-Based, Learning and Technology Initiative for Human-Capacity Building and Community Renewal

Final Report

by Deborah Cherry

Community House is a "Settlement House" that provides numerous support services to the North Side community, including sponsoring the Community Literacy Center (CLC). Dr. Wayne Peck is Senior Minister of First Allegheny Church of Pittsburgh, which is located at Community House, as well as the Executive Director of the CLC, and has extensive experience working with urban youth. A major project of the CLC is Project Struggle, of which Dr. Peck is co-creator along with Dr. Elenore Long and Joyce Baskins. Project Struggle's first implementation resides at Community House. I met with Dr. Peck approximately once a week during the semester to assess the technology needs of the project and discuss with Dr. Peck the best way to meet these needs. Dr. Peck also works two days a week with Jan Leo, a private Technology Consultant with whom he has worked with extensively in the past. Her salary is included in the grant proposals and she is knowledgeable about the technical and pedagogical needs and configurations at Project Struggle.

Project Struggle seeks to utilize technology to combat urban youths' lack of personal identity. It provides tools for students to communicate life as a compelling story, which includes analysis of their current situation, barriers, capabilities, and goals; primary resources in their lives, and consequences of choices made/to make. They will use computers and technology to tell their personal story (something on which they are the expert) through multimedia presentations they create. The one room facility was in the planning/prototyping stage when I started, and is now moving into the implementation stage for programs this summer.

I received my Bachelors of Science in Social and Decision Sciences from Carnegie Mellon University in 1995. Since 1993 I have been working full-time as a Macintosh Software Specialist in the Computing Services Division of Carnegie Mellon University. My primary responsibilities relate to the planning, installation, and maintenance of software on over 250 Macintoshes in nine of the division's public labs, known as Clusters. Although I had not been planning on taking additional courses at this time, since I would like to pursue a career in the non-profit/human services fields, the course announcement sounded like the perfect opportunity for me to get wider experience in this area. This particular project appealed to me on several fronts: it utilized Macintoshes, for which I have extensive experience, especially in configuring multiple machines for use by multiple individuals; the project goals are content-based, rather than technology-based (i.e. the technology is viewed as a tool, not as the ultimate goal); and the project itself sounded very interesting.

Project Struggle's Mission/Goals

Urban youth are often portrayed by stereotypes and caricatures that depersonalize the individual and do not portray their potential. Project Struggle is an attempt to give teenagers a voice in telling their stories, both for their own personal growth and to allow the public to become acquainted with actual people rather than stereotypes. These stories will become the plans for their next educational/vocational steps. The project focuses on the problems, purposes, and possibilities of the teenagers, with the technology staying in the background as a support tool, but not the primary focus. Participants will produce scripts of their life stories that tie together audio, pictures, video, text, and artwork using a mid-range presentation package called Astound. Among the tools they'll be using to gather these materials on the computer are: microphones, digital cameras, scanners to import existing pictures/artwork, video cameras or existing video footage, and they can also generate or modify images, art, text, or video on the computers using assorted software.

The teaching strategy flips the traditional student-teacher model, making the teenager the teacher of their expertise- their life story, creating a mutual learning situation between teenager and adult. After new technology concepts are introduced to the teenagers, they quickly return to something familiar to re-enforce that they are experts in their own fields. This helps keep the technology from intimidating the teenagers so that it remains a useful tool.

OVERVIEW OF PROJECT STRUGGLE ROOM

The room that houses Project Struggle is on the first floor of Community House, off the lobby. The room is roughly fourteen feet square with a small sink area, bay window with bench, an additional door on the side leading to a meeting room, and a large overhead display monitor mounted to the wall for computer display to a large group. In the middle of the room is a large rectangular wheeled table of the Anthro-Cart series (vendor of wheeled modular furniture generally designed for use with computers/in computing environments). This table is flat and is a meeting place and large work area for paper-based tasks. Along one wall are shallow tables where the Apple PowerBook 3400's (laptops) will be used. In one corner is a large Anthro-Cart that houses the Apple Power Macintosh 8100 and associated peripherals used for capturing video and scanning pictures. A small Anthro-Cart with the printer is next to the large Anthro-Cart. Along the wall under the overhead monitor are two mid-sized Anthro-Carts- one has an Apple Power Macintosh Performa that is connected to the overhead display, and one is setup to attach any PowerBook to a 15 inch monitor as well as to the overhead display, but this space will generally hold Dr. Peck's Apple PowerBook G3 when he is utilizing this space. The ISDN modem for Internet connectivity is also on this Anthro-Cart, but although any PowerBook can be used with the setup on this Anthro-Cart, only Dr. Peck's G3 laptop will have the software necessary to utilize the ISDN line. Two white boards on wheels are also in the room. All the machines in the room have large amounts of RAM, large hard drives, CD-ROM's and two forms of removable storage media- Zip drives (100 Megabyte cartridges) and Jaz drives (1 Gigabyte cartridges). Details of the equipment are available in the Appendix.

PROBLEM DESCRIPTION

While Dr. Peck is technically savvy, and had a good idea of what he wanted to accomplish, he was looking for a sounding board and source of additional ideas, and his experience didn't include much in terms of multiple machine management such as networking. I saw the main problem to be to define the work flow process and set up the facility and processes/procedures to best make use of the technology with efficient work flow processes, while keeping it simple for novices to use. A major part of this process is to develop ways of measuring whether the work flow is efficient, in order to identify areas that need revised procedures and/or additional technology, so that the technology continues to serve as a useful tool, and not a stumbling block.

TEACHING STRATEGY

The target audience is fifth through tenth graders, approximately age eleven to fifteen. Much of the teaching strategy centers on "flipping the tables" and making the youth the "expert" and the adults the learners. The youths are experts on the subject- themselves, and as they explore their identity, they will be teaching their supporter about themselves. We hope to create an environment of mutual learning, where each person can learn from the other, regardless of a defined role (youth to youth, youth to adult, etc.). The important thing to focus on is what they do know and can bring to the project, not to be overwhelmed by what they don't know.

General outline of learning process:

- I. Draw a Life Map of past and next 4 years on paper, include critical moments, people who matter, share the map with their supporter (friend or family member who will work with the throughout project).
- II. Work with supporter through Struggle Project Planner (a custom interactive application). Twice a week for 4 weeks, one and a half hours each session. The outcome will be a document of life history and plan.
- III. Translate/re-imagine what was written as an Astound Multimedia presentation over an extended period. The outcome will be a videotape of their personal narrative. As they go through the learning process, after each new skill is learned, they go back to something familiar, such as a discussion at the central table that is non-technology based. This prevents them from being overwhelmed at all the technology, and working on learning and applying small pieces of the technology that advance their skill set. Throughout the process, students needing additional assistance will receive it from Dr. Peck or an assistant.
 - A. After an introduction and discussion of the agenda (seated at central table), students will take the digital cameras and go out into their neighborhood and photograph items of interest. They'll come back and Dr. Peck will demonstrate Photoshop on the overhead display, while they follow along on the PowerBooks utilizing a Photoshop template to learn how to exchange and then manipulate images.
 - B. Students will be introduced to the removable media options by learning how to exchange the CD-ROM unit with a Zip unit that fits into it's place in the PowerBook.
 - C. Students will learn how to use Apple microphones to record System sounds and make some of their own sounds.
 - D. Re-Convening at the central table they'll discuss the different kinds of media and learn about Astound using an orchestra metaphor- they're the conductor organizing all the different elements into a single piece. Over 2 work sessions they'll work on making a 6 panel presentation combining sound, text, and images (approximately 1.5-2 minutes). Once completed, each student will show their work to the group on the overhead display.
 - E. The students will work on identifying, gathering, and creating the script, images, video, sound, etc. that they will include in their narrative. Tools they'll have available to them include the digital cameras, camcorders/VCR, scanner, teleprompter with video camcorder for creating "talking head" narrations, software for word processing, outlining, storyboarding (laying out the sequence of events), and Photoshop for image manipulations (see Appendix for list of resources). They'll modify their material as needed and put the elements together in Astound.
 - F. Once completed, each student will showcase his narrative by presenting it to the group. It may also be showcased during church services and on the overhead monitors in the Community House lobby.
 - G. As the final step, the presentation will be captured on videotape for the student to take with him.

This is only a very basic outline of a very extensive process that the students and their supporters will go through. An additional outcome that we hope to achieve is that some students will develop the skills to get jobs teaching and supporting future groups participating in Project Struggle.

NON-TECHNOLOGY BASED ASSUMPTIONS AND ACTIONS

It is very important that the facility maintain an informal, comfortable feel for students. The room should be inviting to the community, not antiseptic like a "lab." The students need to feel that the room is theirs to work in and take pleasure in what they do, not just where they have to be at certain times of the week.

In order to foster this informality, the room has a sink, warm colors, cushion on the bay window bench, and several bean bag chairs. Meals can be eaten at the central table. The PowerBooks can be checked out for use around the building wherever the student may be comfortable. Each group will pick CD tracks that they want to listen to and will burn CDs with their music to listen to while they work, establishing their ownership of the area.

TECHNOLOGY ASSUMPTIONS AND IMPLEMENTATIONS

Security

There have been problems with thefts occurring after hours that is a concern. Because a strong sense of community ownership is desired, Dr. Peck is reluctant to "bolt-down" equipment, instead relying on keeping the room and equipment secure when not in use. A Honeywell system has been installed in the room to monitor it after hours, a new stronger wood door was installed to replace the glass paned door, and the wheeled and smaller items, including the PowerBooks are stored in a closet elsewhere in the building with very limited access. The equipment is insured in the event that something should happen to it.

Data flow/transfer and Presentation

We examined the assumptions we had about how people would be working. They included:

- Multimedia files can be extremely large
- People would be working on different machines on different days, as well using specialty machines to obtain/convert some kinds of files (video capture, scanning, internet downloads, presentation machine, etc.). Dr. Peck planned to have the students save their files on a Jaz cartridge for ongoing work.
- People would need to display their work on the overhead monitor at various times
- People will be able to sign out PowerBooks to use in any part of the building, where they will not have a network
- Although color printing will need to be authorized by Dr. Peck first, people would have an ongoing need for B&W text printing and basic images for scripts, story boarding, outlines, etc. Also, the existing printer only had a built-in connection for a LocalTalk connection.
- If we had a machine on the internet, one purpose would be for demonstrations of what is available, what other people have done, etc. so that we would need a way to display the machine using the internet on the overhead monitor.
- For the initial phase, we only wanted one machine to access the internet until it was determined that it would positively enhance the project's program.

Given these assumptions, and the fact that each machine will have a Zip and Jaz drive connected to it in some manner, we felt the best approach to data transfer to/from specialty machines would be via Zip/Jaz, since even a fast (Ethernet) network would take significant time to transfer large multimedia files, and would require a higher level of technical sophistication and a more complicated setup to utilize file sharing. Because of this decision and the decision to only give one computer access to the internet at this time, a LocalTalk network connecting all computers and the printer was deemed sufficient at this time. While this should be sufficient at this time, the major push for Ethernet will probably come if a decision is made to expand internet access to the other machines, requiring an Ethernet connection to maintain reasonable access speeds. When that time comes, in addition to the networking equipment, a solution will have to be found to keep the printer on the network.

While an ideal setup would be to have all the computers connected to the overhead display (both video and audio into a switchable input system) so that anyone can show something immediately, this setup would be expensive and complex. In addition, it would add a significant amount of cabling around the room, and all cabling must be external due to the concrete walls. The room attempts to maintain a feeling of being in a home, and the addition of a lot of cables and/or installation of cable trays around the entire room might negatively impact this atmosphere. We felt that students would only occasionally have something to present overhead, so we opted to make the Performa, which is a less powerful machine, the "presentation" machine, and relegate some other lower-end tasks to it such as word-processing, outlining, and (eventually) internet access. This would leave the higher end machines available for work that required it (as well as the lower-end items besides presentation and internet). With this setup, only 1 machine would need to be connected to the display, and can be used as a "player" to present projects and to present internet demos. When not being used to display on the overhead, it can still be useful for internet access, word processing, etc. For sound, the Performa is connected to a set of Radio Shack speakers/subwoofer to cover the entire room.

For the first phase of this project, while evaluating the usefulness of an internet connection (see later section), the ISDN modem will be connected to the smaller Anthro Cart that Dr. Peck plans to use his G3 PowerBook on. Since the overhead display can switch between 2 input sources, this PowerBook station will have a PCMCIA video card connected to the second input connection in order to display work done on this computer on the overhead display, including internet demos. Using this card also means that any of the PowerBooks can be brought over to the small Anthro Cart and quickly connected to the overhead display, which may prove more convenient than bringing a Jaz cartridge over, at least for in-progress work. At a future time, the PowerBook G3 will be replaced by a resident desktop G3, at which time the ISDN line will be moved to the Performa, freeing the G3 for more processor intensive uses, and leave the video card connected to the overhead display on a side table where students can bring the PowerBooks over and easily connect to the overhead display. Since the PowerBook G3 only has one serial port, and it is needed by both the ISDN modem and the LocalTalk network connection, a port switcher will need to be purchased for this machine to minimize cable juggling during use. When the time comes, the internal modem in the Performa will need to be removed in order to connect the ISDN modem. For audio- an A/B switch can be used to hook the G3 into the Radio Shack speakers.

If we find that this presentation system does not meet our needs, we will explore other options for a more comprehensive solution.

Software Management

It is important that all the machines have a consistent interface/setup to make it easier for the students to find items. It is also very important to make sure each computer remains properly configured, although the students may intentionally or unintentionally alter it. A standard setup will be configured and then stored on a Jaz to make it easy to refresh the system to a known good state quickly. Procedures should be setup for doing this refresh regularly, as well as for doing it as needed.

Physical Layout

As mentioned earlier, the room environment will be as informal as possible, including bean bag chairs, music of the students' choice, and the ability to work outside of the room with the PowerBooks. The biggest drawbacks with the room are the chairs and the walls. Currently, the chairs are padded folding chairs and I recommend that they be replaced with wheeled, office-type chairs better able to move around with the students as well as being more ergonomic. The walls are concrete, which mean that no additional wiring can be run through them. The bottom half of the walls are wood paneling, so installing wire trays would seriously detract from the beauty of the room and start shifting the atmosphere towards more of a lab environment. Currently cables are run on the floor along the baseboard.

Because the PowerBooks will be disconnected and connected from the cables/peripherals on the desk regularly, we are hoping to use BookEndZ docking stations that hold the cables in place to help simplify the process and minimize wear and tear on the cables. We are anxiously awaiting the roll out of the PowerBook 3400/G3 model of BookEndZ any day now.

Internet Connection

Since Project Struggle's main goal is for self-exploration and expression, there is concern that having easy access to the Internet on each machine will prove to be more of a distraction than a tool, plus there is an additional need to keep an eye on what the students are doing to assure they are not viewing inappropriate sites. There is also concern that numerous machines may substantially increase the cost for internet connectivity. On the other hand, the internet can offer many resources, including, but not limited to: source for clip art, research on individuals and places, and most importantly a source of ideas of how other people have approached similar goals. As a balance to these issues, there will be one computer with access to the Internet, so it can still be used as a resource, but will hopefully limit it as a distraction from the Project Struggle work, and can be more easily monitored. Since streaming video will be an important component and has high bandwidth requirements, we decided to go with an ISDN line, which Dr. Peck is familiar with from home. As an extra method of control and monitoring use, for the initial phase, Dr. Peck's PowerBook G3 will be used for the connection, since this machine is not left out when Dr. Peck is not around. Procedures will need to be developed to insure that the connection is not left active when not in use to prevent unnecessary charges. If we decide to connect more machines to the Internet in the future, we can explore options for ISDN routers, etc. as well as an Ethernet network. See above for additional discussion of the machine to be used with the ISDN connection.

Future Technologies

We discussed some of the new and upcoming technologies for future implementations/facilities for project Struggle. We gathered information on the new Power Macintosh G3 systems and whether they would be suitable for this work, and felt that they would be. At some time in the future a desktop G3 system will replace Dr. Peck's PowerBook G3 in the facility. They would also make excellent systems for a future lab, along with the PowerBook G3s. I gave Dr. Peck a tour of CMU's new Multimedia Studio to get a feel for digital video and audio, as well as some of the issues/problems we've had supporting these machines as they might relate to Project Struggle. While Digital Video is particularly attractive for the high quality of picture that is transferred digitally, as well as its smaller size files compared to analog systems, it is not even close to being an everyday consumer technology, so final presentations would still need to be put onto standard VHS tapes in order for students to take their work elsewhere. Also, VHS capture would still need to be setup in order to capture images from existing home videotapes. No decisions have been made about this path for future projects, this was merely a discussion about what was involved and what issues it might present in the context of Project Struggle.

Evaluation

In order to assess how well the process is working, we will be developing a diagnostic pre-test in order to identify how familiar/comfortable each student is with technology. This pre-test will serve several purposes:

- It will allow us to pair students, although we have not yet decided whether to pair students with similar skill levels or divergent skills.
- It will allow us keep an eye on how those less comfortable with technology adapt to the technology environment and be mindful of whether they are progressing as well as those already comfortable with technology.
- It will allow us to assess how far they have progressed both during the project and at the conclusion.

We are developing criteria to evaluate both the programmatic elements and the technology. Some modifications will likely be made during the course of the first group of participants to accommodate problems encountered, others will be implemented after the first batch have completed the program and a full evaluation is conducted.

RECOMMENDATIONS:

- Assuming all goes well with internet connectivity on the PowerBook G3, move the ISDN line over to the Performa to free up the G3 for other more processor intensive uses as soon as possible. This also means that internet connectivity is no longer contingent on Dr. Peck's presence.
- As soon as BookEndZ for PowerBook 3400/G3 ships, purchase at least one for the Anthro-Cart for the G3. If it passes the evaluation there, purchase one for each PowerBook.
- Replace the folding chairs with wheeled, office-type chairs better able to move around with the students as well as being more ergonomic.
- Develop a manual, for others to be able to support the project, which should include at least the following:
 - Details of the setup of each machine
 - Operating instructions for specialty items (a copy of which should be kept handy at the specialty equipment for student use)
 - Operating Procedures for Staff- how to refresh software (both as needed and on a regular schedule to keep things running smoothly), making sure ISDN is disconnected at end of day, color printing guidelines, etc.
 - Basic troubleshooting, solutions to common problems
 - List of resources, both personnel and technical (i.e. Jan Leo, tech support numbers for products, warranty info/length of coverage, etc.)
- Establish diagnostic pre-test to establish initial technology comfort level.
- Establish criteria for evaluating beta-testers.

APPENDIX

RESOURCES AND ENVIRONMENT

EQUIPMENT

- 3 PowerBook 3400's- 1G HD, 120M RAM with VST Zip drives for expansion bay (in addition to CD-ROM) (total of 5 3400s available) with external Jaz drives.
- 1 PowerMac 8100/100 AV (98M RAM, 2G HD & 1G HD) with 17" AppleVision Monitor (to be replaced by a 9600 with video capture card in the future once after-hours security issues resolved)
 - external zip
 - external Jaz drive
 - Video Capture board
 - VCR
 - Radius VideoVision (strip 'o ports)
- 1 Performa 6400/180 with internal modem, 49M RAM, 1.5G HD and 15" Multiscan monitor and external zip and external Jaz drive. Radio Shack speakers attached for presentation sound.
- PowerBook G3- Connected to ISDN line. 96M RAM, 4.7G HD. VST Zip drive for expansion bay, external Jaz. Has 15" Multiscan AV Display on Anthro cart to attach.
- PowerBook 540c to be used with Teleprompter
- TV/Monitor installed overhead on wall for presentation display.
- FOCUS TVView Gold adapter to convert Mac video out to NTSC to input into the TV
- FOCUS TVView PresoCard (PCMCIA card) for use with G3 (or any of the 3400s can be brought over to cart for presentation)
- BookEndZ docking station (at least for G3) as soon they ship for cable management.
- HP DeskJet 870Cse (color inkjet printer) on LocalTalk network
- MicroTek ScanMaker E6 Scanner connected to 8100
- Wheeled QuickTime VR Stand (tripod configured for making QTVR images)
- Digital Cameras- 2 Sony Mavicas, 2 QuickTake 200s, 1 QuickTake 100
- Wheeled Teleprompter with videocamera (attaches to serial port of a Mac)
- Lights and backgrounds for use with "talking head" videotaping
- LocalTalk Network installed between all computers.

FACILITIES

- Room is approximately 14' by 14' with main entrance, a side door to an adjoining room, small kitchen counter, and a bay window with bench
- Walls are 13" concrete so adding wiring, etc. through wall not generally feasible
- Furniture
 - 1 large Anthro-Cart for 8100/video capture
 - 2 small Anthro-Carts for 1 for Performa, 1 for PowerBook G3
 - 1 printer Anthro-Cart for printer
 - 1 large rectangular Anthro table (on wheels) in the middle of the room (used a gathering place or layout area, not for computers generally)
- 2 shallow long wooden tables (not much deeper than PB) with locking drawers
- 2 Anthro-White Boards on wheels
- Padded folding chairs
- Approximately one outlet for every 2 PowerBooks, will be using Power Strips

SOFTWARE

- Astound (presentation)
- Microsoft Word
- Inspiration (outlining)
- Adobe Premiere
- Director
- mTropolis (storyboarding)
- QuickTime VR authoring
- Adobe After Effects
- PowerPoint (as stepping stone to Astound if necessary)
- Teleprompter software